



Introduction

Read this chapter to familiarize yourself with the features, benefits, and capabilities of the Catalyst Express 500 switches.



Note

This chapter and the rest of this guide focus on the concepts and tasks that are available from the switch hardware and the device manager GUI that is embedded in the switch software.

Enhanced Catalyst Express 500 features and procedures are only available from the Cisco Network Assistant network management application. This application can be downloaded from Cisco.com. Refer to the Network Assistant documentation about these enhanced switch features.

Chapter Topics

- [Overview, page 1-2](#)
- [Features and Benefits, page 1-4](#)
- [System Requirements, page 1-10](#)
- [Switch Management Options, page 1-11](#)
- [Supported Hardware, page 1-13](#)
- [When You Are Done, page 1-13](#)

Overview

The Catalyst Express switches ([Table 1-1](#)) provide networking for businesses with up to 250 employees. These switches provide network services to support data, voice, and mobile network demands. The services ensure transmission quality and reliability for data and voice traffic. They also provide security to protect against network attacks.

You can simply install the switch and allow it to operate without any further management intervention. You can also take advantage of the embedded software features—tools to quickly and easily set up, customize, monitor, and troubleshoot the switch—to optimize your use of the switch.

Table 1-1 **Catalyst Express 500 Switch Models**

Catalyst Express 500-24TT

This switch is designed for providing standard connections to network users. It has:

- 24 10/100 (*Fast Ethernet*) ports for desktop connectivity
- 2 10/100/1000BASE-T (*Gigabit Ethernet*) ports for uplink or server connectivity

Catalyst Express 500-24LC

This switch is designed for connecting wireless access points to your network. It has:

- 20 10/100 ports for desktop connectivity
- 4 10/100 Power-over-Ethernet (PoE) ports for desktop, wireless access point, IP telephony, or closed-circuit TV camera connectivity
- 2 10/100/1000BASE-T or small form-factor pluggable (SFP) module ports for uplink or server connectivity

Catalyst Express 500-24PC

This switch is designed for providing PoE connections to IP phones. It has:

- 24 10/100 PoE ports for desktop, wireless, IP telephony, or closed-circuit TV camera connectivity
- 2 10/100/1000BASE-T or SFP module ports for uplink or server connectivity

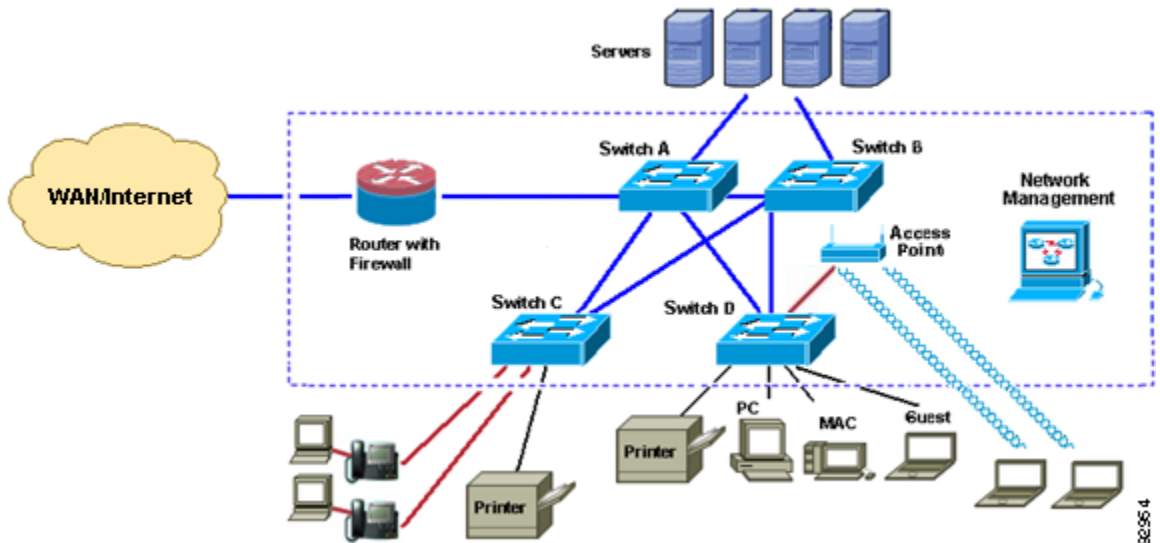
Catalyst Express 500G-12TC

This switch is designed for high-speed connections to servers and switches. It has:

- 8 10/100/1000BASE-T ports for high-speed, desktop connectivity
 - 4 10/100/1000BASE-T or SFP module ports for server aggregation or server connectivity
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Figure 1-1 is an example network using Catalyst Express switches. Devices outside the dotted line are network users and network resources, such as servers and printers. Devices within the dotted line are switches, routers, and access points that enable communication between network users and provide access to network resources.

Figure 1-1 Catalyst Express Network Example



Any of the Catalyst Express switch models can be Switches A, B, C, and D in this network. To take full advantage of the different switch models, use the model that is designed for the type of connections that you require.

For example, use the Catalyst Express 500G-12TC for Switches A and B. This model has the most Gigabit Ethernet ports, and it is best suited to providing 1000-Mbps connections between switches and to servers.

Use either the Catalyst Express 500-24TT or the Catalyst Express 500G-12TC for Switches C and D. These switches are designed to provide high-speed (up to 100 Mbps and 1000 Mbps, respectively) connections to network users.

If you need to connect PoE devices to your network, use the Catalyst Express 500-24LC and the Catalyst Express 500-24PC. These switches can provide power to up to 4 or up to 24 PoE devices, respectively.

PoE connections from the switch provide both power and network access to PoE-capable devices, such as IP phones and access points. PoE devices can receive up to 15.4 W of power from their connections to the switch. PoE also helps reduce cabling costs. You can place PoE devices where power outlets are not available or are not convenient.

Multiple connections between the switches ensure that users maintain network access if any of the switches becomes overused or unavailable.

A network administrator can manage the network onsite or remotely through the device manager GUI (embedded in the Catalyst Express switches), through Cisco Network Assistant, or through a Simple Network Management Protocol (SNMP)-based network management application. For more information about managing the switches, see the [“Device Manager GUI” section on page 1-8](#) and the [“Switch Management Options” section on page 1-11](#).

For more information about how to optimize the connections in a Catalyst Express network, see the [“Optimize Ports through Smartports Port Roles” section on page 3-2](#).

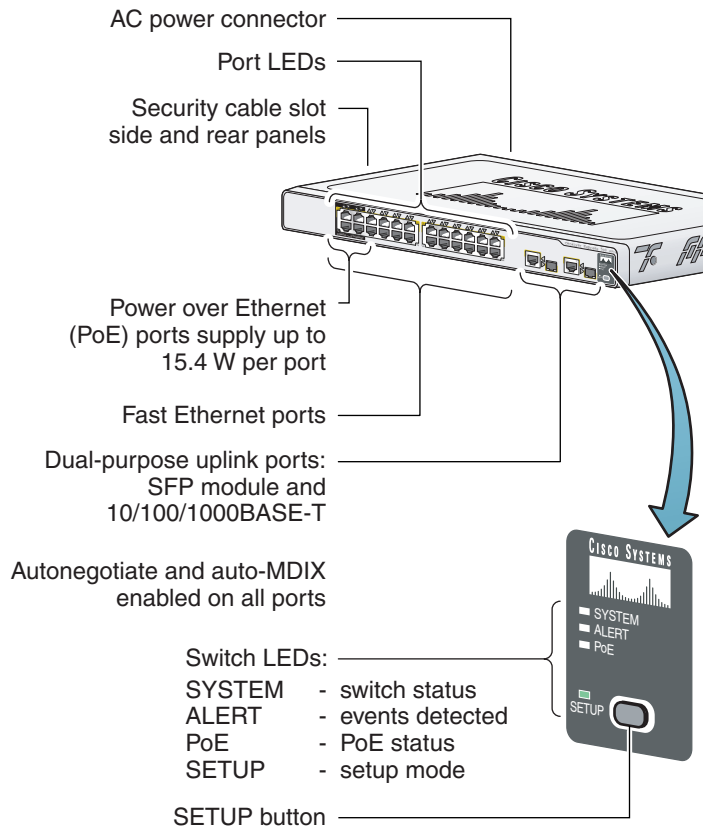
Features and Benefits

- [Hardware Features, page 1-5](#)
- [Software Features, page 1-7](#)
- [Device Manager GUI, page 1-8](#)

Hardware Features

Figure 1-2 and the list that follows describe the switch hardware features and the benefits that they provide. All switches can be installed on a table top, in a rack, or mounted on a wall. For hardware installation information, see the “[Install the Switch](#)” section on page 2-5.

Figure 1-2 Catalyst Express 500 Hardware Overview



10/100-Mbps Fast Ethernet Ports

10/100/1000-Mbps Gigabit Ethernet Ports

- Autosensing (autonegotiation) of port speed and autonegotiating of duplex mode optimizes port bandwidth.
- Automatic-medium-dependent interface crossover (auto-MDIX) capability automatically detects the required cable connection type (straight-through or crossover) and configures the connection appropriately.

PoE-Capable Ports (Available only on the Catalyst Express 500-24LC and Catalyst Express 500-24PC switches.)

- Up to 15.4 W of power provided to connected Cisco prestandard and IEEE 802.3af-compliant powered devices if the switch detects that there is no power on the circuit.

SFP Module Slots

- Fiber-optic SFP modules provide cable media and distance options for switch connectivity. A list of supported Cisco SFP modules is in the [“Supported Hardware” section on page 1-13](#).

LEDs

- System LEDs show switch status, problem detection, PoE usage, and setup status.
- Port LEDs show port status. From the device manager GUI, port LEDs also show duplex mode, speed, and PoE status.
- RPS LED shows status of an installed Cisco redundant power supply (RPS). (Available only on the Catalyst Express 500-24PC model.)

Setup Button

- Button starts the Express Setup program.

Cisco Redundant Power Supply (RPS)

- Cisco redundant power supply (RPS) enhances power reliability. A list of supported RPS models is in the [“Supported Hardware” section on page 1-13](#). (Available only on the Catalyst Express 500-24PC model.)

Security Slots

- Slots to attach a security cable to the switch.
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Software Features

These are the switch software features and the benefits that they provide. You can configure these features through the device manager GUI (see the [“Device Manager GUI” section on page 1-8](#)). For details on these features, see the chapters on [Customization](#), [Monitoring](#), and [Troubleshooting](#).

**Note**

For enhanced switch features that are available only through Network Assistant and not through the device manager GUI, see the [“Cisco Network Assistant” section on page 1-12](#).

Express Setup

- Initial setup only requires IP information for first-time switch configuration.
- Quick IP information updates if you relocate the switch to a different network.
- Date and time settings automatically synchronized between the switch and the network management station.
- Dynamic Host Configuration Protocol (DHCP) automatically assigns the switch an IP address, a default gateway, and a subnet mask from a DHCP server.

Troubleshooting

- General switch diagnostic test detects problems on the switch. Link diagnostic test detects cable-related issues on a specified port.
- General switch and link diagnostic reports describe problems detected on the switch and its ports and list recommended actions to resolve each problem.

Monitoring

- Alert LED notifies that one or more problems were detected on the switch.
 - Alert Log lists all problems detected on the switch, including a timestamp of the most recent detection of each problem.
 - Graphical front panel display, LEDs, gauges, graphs, and animated indicators show switch and port status, utilization, and error percentages, and temperature and fan status.
 - Port status and statistics tables display port operating status and the statistics for data being received and sent on each port.
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Customization

- Smartports port roles optimize switch ports according to their attached devices. Security and quality of service (QoS) benefits are built into the port roles.
- Secure Socket Layer (SSL) protocol authenticates and encrypts communications to the switch device manager GUI. (Requires the cryptographic version of the switch software available from the software download page on Cisco.com.)
- Username-and-password pair configuration for controlling switch access.
- VLANs for grouping network users according to functions, teams, or applications, and regardless of the physical location of the network users. The switch supports up to 32 VLANs.

VLAN support includes these features:

- Spanning Tree Protocol (STP) prevents network loops from developing and provides a redundant path if the active path becomes unavailable.
 - Internet Group Management Protocol (IGMP) snooping reduces duplicate and excess traffic on the network.
 - EtherChannels for bundling multiple Fast Ethernet or Gigabit Ethernet ports into a single logical link to create a higher bandwidth link between the switch and another switch.
 - Simple Network Management Protocol (SNMP) versions 1, 2C, and 3 to allow a remote network management station to access, monitor, and control the switch.
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Device Manager GUI

The device manager is a graphical device management tool for configuring, monitoring, and troubleshooting the switch ([Figure 1-3](#)).

It simplifies configuration tasks with features such as Express Setup and Smartports for quickly setting up the switch and its ports. It uses graphical, color-coded displays such as the switch front panel view, graphs, and animated indicators to simplify monitoring tasks. It provides alert and diagnostic tools to help you identify and solve networking problems.

Additional details about the device manager and procedures on using the device manager windows are available from the device manager online help ([Figure 1-4](#)).

You can display the device manager from anywhere in your network through a web browser such as Microsoft Internet Explorer or Netscape Navigator. For information on how to display the device manager, see the [“Display the Device Manager” section on page 2-13](#).

Figure 1-3 Device Manager Interface

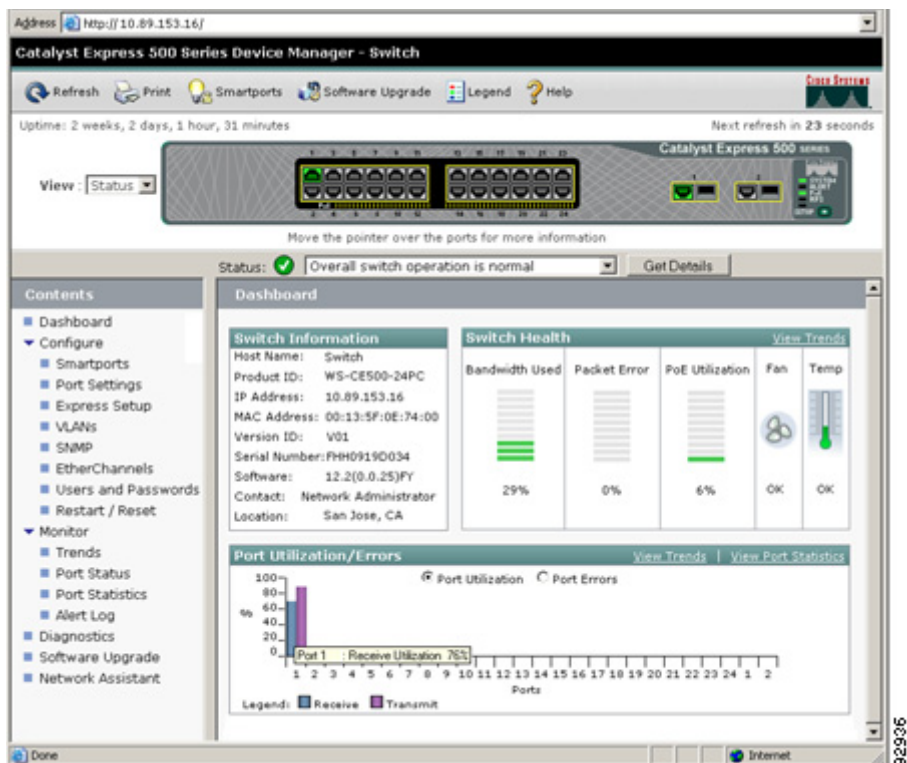
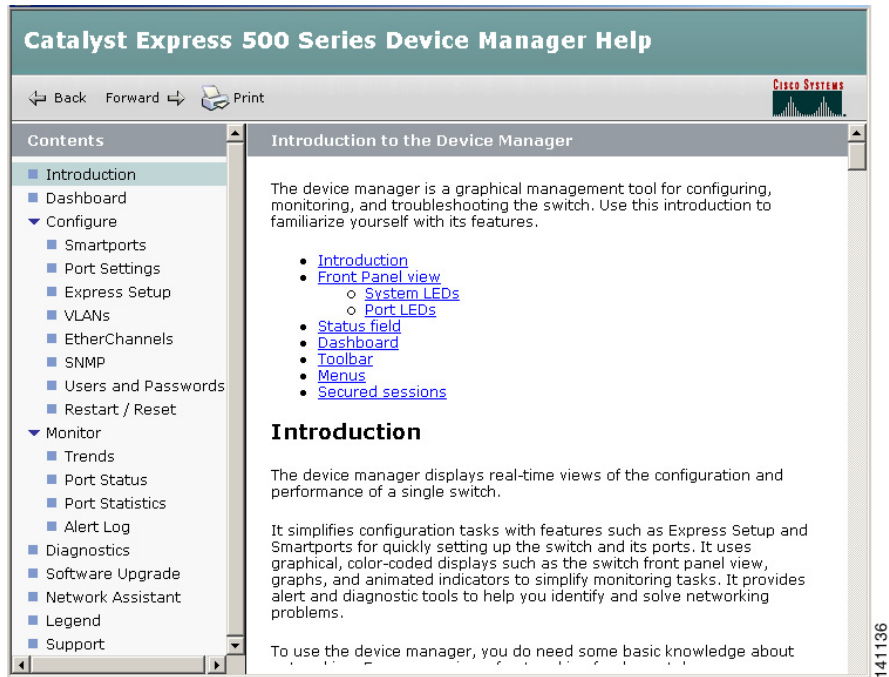


Figure 1-4 **Device Manager Online Help**

System Requirements

- [Hardware Requirements, page 1-11](#)
- [Software Requirements, page 1-11](#)

Hardware Requirements

Table 1-2 lists the minimum hardware requirements for running the device manager.

Table 1-2 *Hardware Requirements*

Processor Speed	DRAM	Number of Colors	Resolution	Font Size
Intel Pentium II ¹	64 MB ²	256	1024 x 768	Small

1. We recommend Intel Pentium 4.
2. We recommend 256-MB DRAM.

Software Requirements

Table 1-3 lists the supported operating systems and browsers for using the device manager. The device manager verifies the browser version when starting a session to ensure that the browser is supported.

You should disable any pop-up blockers or proxy settings in your browser software and any wireless clients running on your PC.

Table 1-3 *Supported Operating Systems and Browsers*

Operating System	Microsoft Internet Explorer ¹	Netscape Navigator
Windows 2000	5.5 or 6.0	7.1
Windows XP	5.5 or 6.0	7.1

1. Service Pack 1 or higher is required for Internet Explorer 5.5.

Switch Management Options

In addition to the device manager GUI, you can also use these tools to manage the switch:

- [Cisco Network Assistant, page 1-12](#)
- [Simple Network Management Protocol, page 1-13](#)

Cisco Network Assistant

The switches support the Cisco Network Assistant network management application. Network Assistant offers an enhanced set of features for configuring and monitoring one or more devices, including switches, device clusters, device stacks, routers, and access points.

Catalyst Express 500 features that are available on Network Assistant but not available from the device manager include:

- Levels (Low, Medium, or High) of network security and switch access for devices attached to the switch
- Smartports Diagnostics port role to optimize the connection between a switch port and a network troubleshooting device
- Device inventory to retrieve information such as the IP address, the MAC address, and the port role information of devices connected to the switch

Some general Network Assistant features include:

- Centralized, common services—such as software upgrades, configuration management, inventory reports, network events, alerts, and password synchronization—for Cisco switches, routers, and access points in the network
- Centralized network monitoring using two different views of all connected devices in the network: a physical view (front panel images) and a logical view (network topology image of different network devices, including IP phones)
- Drag-and-drop software upgrade for multiple switches, including backup-and-restore through a switch configuration file
- Security configuration for all the Cisco access points in the network
- Interactive tools (such as wizards) to simplify configuration of complex features

For more information, see the Cisco Network Assistant Introduction at this URL:

<http://www.cisco.com/go/networkassistant>

Simple Network Management Protocol

You can use Simple Network Management Protocol (SNMP) management applications to manage the switch. You also can manage it from an SNMP-compatible workstation.

Supported Hardware

The switches support the PWR675-AC-RPS RPS. (Available only on the Catalyst Express 500-24PC model.)

The switches support these Cisco SFP modules:

- 100BASE-BX
- 100BASE-FX
- 100BASE-LX
- 1000BASE-LX
- 1000BASE-SX

When You Are Done

If you have not already installed the switch and configured its basic settings, see [Chapter 2, “Setup and Installation.”](#)

If you already installed and configured the switch with its basic settings, see [Chapter 3, “Customization,”](#) to learn about features that can optimize the switch performance.

